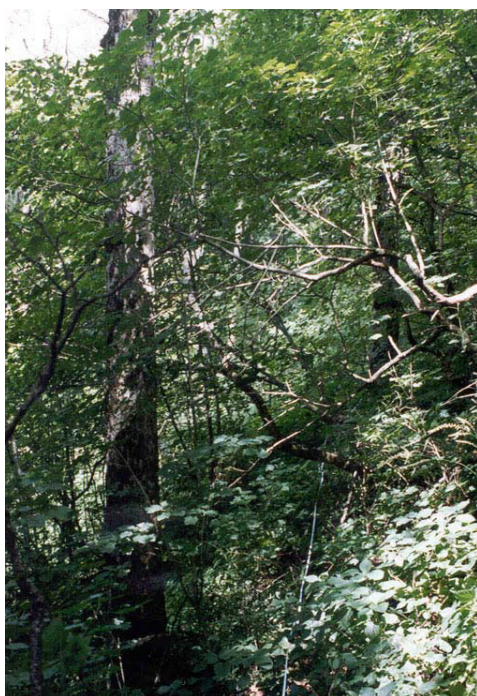


**Great Smoky Mountains National Park**  
**photographs of**  
***Betula alleghaniensis* / *Acer spicatum* / *Hydrangea arborescens* -**  
***Ribes cynosbati* / *Dryopteris marginalis* Forest**



***Betula alleghaniensis* / *Acer spicatum* / *Hydrangea arborescens* - *Ribes cynosbati* / *Dryopteris marginalis* Forest**

***Betula alleghaniensis* / *Acer spicatum* / *Hydrangea arborescens* - *Ribes cynosbati* / *Dryopteris marginalis* Forest**

COMMON NAME	Yellow Birch / Mountain Maple / Wild Hydrangea - Prickly Gooseberry / Marginal Shield-fern Forest
SYNONYM	Southern Appalachian Hardwood Boulderfield Forest (Typic Type)
PHYSIOGNOMIC CLASS	Forest (I)
PHYSIOGNOMIC SUBCLASS	Deciduous forest (I.B)
PHYSIOGNOMIC GROUP	Cold-deciduous forest (I.B.2)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (I.B.2.N)
FORMATION	Lowland or submontane cold-deciduous forest (I.B.2.N.a)

ALLIANCE *Betula alleghaniensis* - *Fagus grandifolia* - *Aesculus flava* Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Upland

RANGE

**Globally**

This community is distributed in the moderate to high elevation (2000-4000 feet) regions of the Blue Ridge and Cumberland Mountains, and could possibly extend into the adjacent Ridge and Valley and Appalachian Plateau provinces. It occurs in Georgia, Kentucky, North Carolina, and Tennessee, and could possibly extend into Virginia.

**Great Smoky Mountains National Park**

This association was found on both the Cades Cove and Mount Le Conte quadrangles, and it should occur elsewhere in the Park on boulderfields below 5000 feet elevation. It was sampled on the southwestern portion of the Cades Cove quadrangle, at the headwaters of Forge Knob Branch. On the southwestern portion of the Mount Le Conte quadrangle, this association was sampled southwest of Rocky Spur in the vicinity of Le Conte Creek and also southwest of Balsam Point. This community was also sampled in the central portion of the Mount Le Conte quadrangle, in a north-facing ravine west of Trillium Gap.

ENVIRONMENTAL DESCRIPTION

**Globally**

This community occurs in a cool, humid climate, on steep, rocky, northwest- to northeast-facing, middle to upper concave slopes, or in saddles between ridges, at moderate to high elevation (2000-4000 feet). These forests grow over bouldery talus and are often associated with small streams and seepage.

**Great Smoky Mountains National Park**

This community was found on steep to moderately steep slopes, in draws, and on periglacial boulderfields from 4000 to 5000 feet elevation. Aspects were north and west. Disturbance by wind and ice is common. There is little soil development, and the substrate is rubble, large rocks, and boulders. This community is associated with small creeks and seeps.

MOST ABUNDANT SPECIES

**Globally**

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Betula alleghaniensis</i>
Tall shrub	<i>Acer spicatum</i>
Short shrub	<i>Ribes cynosbati</i> , <i>Ribes rotundifolium</i>

**Great Smoky Mountains National Park**

<u>Stratum</u>	<u>Species</u>
Tree canopy	( <i>Betula alleghaniensis</i> , <i>Aesculus flava</i> )
Tall shrub	<i>Acer spicatum</i>
Short shrub	<i>Hydrangea arborescens</i> , <i>Euonymus obovata</i>
Herbaceous	<i>Dryopteris intermedia</i>
Epiphyte	<i>Polypodium appalachianum</i>

CHARACTERISTIC SPECIES

**Globally**

*Betula alleghaniensis*, *Aesculus flava*, *Betula lenta*, *Acer spicatum*, *Hydrangea arborescens*, *Ribes cynosbati*, *Dryopteris marginalis*, *Aristolochia macrophylla*

**Great Smoky Mountains National Park**

*Betula alleghaniensis*, *Acer spicatum*, *Euonymus obovata*, *Polypodium appalachianum*

VEGETATION DESCRIPTION

**Globally**

This forest is usually strongly dominated by *Betula alleghaniensis*, though other species such as *Aesculus flava*, *Betula lenta*, and *Tilia americana* var. *heterophylla* may also be common. *Betula alleghaniensis* in the canopy are often stunted and gnarled, with roots that may have grown to encircle the boulders. Tree windthrow is common, leaving patches of exposed mineral soil and gaps in the canopy. A woody layer of shrubs and vines is usually well-developed, because of the development of this community on periglacial boulderfields of blocky talus, limiting rooting opportunities for most herbaceous plants. Typical shrubs and vines, which are more abundant in this type than in other associations include *Acer spicatum*, *Aristolochia macrophylla*, *Hydrangea arborescens*, *Parthenocissus quinquefolia*, *Ribes cynosbati*, and *Ribes rotundifolium*. *Dryopteris marginalis* is often an abundant herb.

**Great Smoky Mountains National Park**

This forest has a canopy dominated by *Betula alleghaniensis* and/or *Aesculus flava*. *Betula alleghaniensis* in the canopy are often stunted and gnarled, with roots that may have grown to encircle the boulders. Tree windthrow is common, leaving patches of exposed mineral soil and gaps in the canopy. Other species in the canopy and subcanopy can include *Tilia americana* var. *heterophylla*, *Fagus grandifolia*, *Acer saccharum*, *Acer spicatum*, *Tsuga canadensis*, and *Picea rubens*. Shrub density is typically high but may vary between occurrences. The shrub stratum is dominated by the tall shrub *Acer spicatum* and the short shrubs *Hydrangea arborescens* and *Euonymus obovata*. *Ribes rotundifolium* and *Ribes cynosbati* are conspicuous in the shrub stratum. Other shrubs include *Viburnum lantanoides*, *Sambucus racemosa* var. *pubens*, and *Rubus canadensis*. Herb cover is moderate to dense, and herb strata tend to be diverse. Herbs and mosses cover the rocks and boulders. *Dryopteris intermedia*, *Stellaria pubera*, and the epiphyte *Polypodium appalachianum* are the most constant species in the stands sampled. Other common herbs include *Ageratina altissima* var. *roanensis*, *Allium tricoccum*, *Angelica triquinata*, *Arisaema triphyllum*, *Aster chlorolepis*, *Cimicifuga americana*, *Diphylleia cymosa*, *Galium triflorum*, *Hydrophyllum canadense*, *Laportea canadensis*, *Melanthium parviflorum*, *Oxalis montana*, *Solidago caesia* var. *curtisii*, *Tiarella cordifolia*, and *Trillium erectum*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK                      G3

RANK JUSTIFICATION

This community is scattered throughout the high mountains but fairly uncommon. Unlike many other forest types in the southern Appalachians, this community has not historically been a threatened by logging because of the stunted nature of the trees and the inaccessibility, to loggers, of boulderfields.

DATABASE CODE                      Cegl004982

COMMENTS

**Globally**

This type is conceptually similar to *Betula alleghaniensis* / *Ribes glandulosum* / *Polypodium appalachianum* Forest (CEGL006124), which is more restricted to very moist boulderfield situations at high elevations (4500-5300 feet). *Betula alleghaniensis* / *Acer spicatum* / *Hydrangea arborescens* - *Ribes cynosbati* / *Dryopteris marginalis* Forest generally occurs at lower elevations in less extreme environmental situations and lacks species characteristic of high elevations. Similar *Betula alleghaniensis*-dominated forests occur on glaciated rocky slopes in the upper mid-Atlantic and in the northeastern United States. The *Betula alleghaniensis*-dominated periglacial boulderfields of the southern Appalachian Mountains are distinguished from the northern forests by the occurrence of southern Appalachian endemic species, better developed shrub layers, and slightly less species diversity.

**Great Smoky Mountains National Park**

Examples of this community in the Great Smoky Mountains National Park, particularly ones at high elevations, are compositionally similar to *Betula alleghaniensis* / *Ribes glandulosum* / *Polypodium appalachianum* Forest (CEGL006124). In the Park, this latter community is distinguished by occurring over 5000 feet elevation and by the occurrence of high elevation species such as *Abies fraseri*, *Dryopteris campyloptera*, *Ribes glandulosum*, *Rugelia nudicaulis*, *Streptopus amplexifolius*, *Prunus pensylvanica*, and *Sorbus americana*.

REFERENCES

Chafin and Jones 1989, Evans 1991, Rawinski 1992, Schafale and Weakley 1990